

# ERRATA

## ***Nebraska Department of Transportation***

### ***Roadway Design Manual***

#### **Chapter Ten: Miscellaneous Design Issues**

June 2016

① February 2017

② July/August 2017

③ February 2018

④ June 2018

⑤ August 2018

⑥ December 2018

The last update to the Roadway Design Manual (RDM) was in 2006. In the intervening years some design guidance has become obsolete, new/updated guidance has become available, offices of responsibility have changed, design procedures have been streamlined, etc. The NDOT is in the process of updating the *RDM* but, in the interim, the obsolete/incorrect guidance is being addressed through this document and a re-issued *RDM*. Page numbers cited in this document are referenced to the December 2018 Errata RDM. Deleted text in the December 2018 Errata RDM is in green with a strike through (**errata**) and new/corrected text is in red (**correct**). The following chapters have already been addressed:

- ⑥ Contents (updated in December 2018)
- ⑥ List of Exhibits (updated in December 2018)
- Chapter Three: Roadway Alignment (updated on June 17, 2011)
- Chapter Four: Intersections, Driveways and Channelization (updated on April 19, 2012)
- Chapter Six: The Typical Roadway Cross-Section (updated on February 18, 2016)
- ⑤ Chapter Seven: Earthwork (updated on August 2, 2018)
- Chapter Eight: Surfacing (updated on December 15, 2015)
- ⑥ Chapter Nine: Guardrail and Roadside Barriers (updated on December 13, 2018)
- ① Chapter Eleven: Highway Plans Assembly (updated on February 21, 2017)
- ② Chapter Twelve: Cost Estimating & Funding (updated on August 16, 2017)
- ① Chapter Fourteen: Traffic (updated on October 19, 2016)
- ③ Chapter Fifteen: Right-of-Way (updated on February 26, 2018)
- Chapter Sixteen: Pedestrian and Bicycle Facilities (added on February 8, 2016)
- Chapter Seventeen: Resurfacing, Restoration and Rehabilitation (3R) Projects (added on March 26, 2014)
- ⑥ Index (updated in December 2018)

The following items pertain to the entire manual:

- June 2016 and all subsequent changes – Chapter and EXHIBIT citations have been updated to the latest edition of the *RDM*
- ② July 2017 - All references to the **Nebraska Department of Roads (NDOR)** have been changed to the **Nebraska Department of Transportation (NDOT)**
- ⑥ December 2018 – Plan Sheet numbering updated (See Chapter Eleven, EXHIBIT 11.1)

Page	Existing Text	Corrected Text
<b>Chapter Ten</b>		
⑤ 10-1	<b>Section 1: RAILROADS</b>	New section – this had been Section 5.G of Chapter Thirteen.
④ 10-2	<b>Section 1.A: <u>Railroad/Highway Grade Crossings</u></b> – “Early coordination with <b>Railroad Liaison Engineer</b> is required.”	“Early coordination with the <b>Rail Highway Liaison Engineer</b> in <b>Intermodal</b> is required.”
④ 10-2	<b>Section 1.A: <u>Railroad/Highway Grade Crossings</u></b> – “The designer should contact and coordinate with the <b>Railroad Liaison Engineer</b> .”	“The designer should contact and coordinate with the <b>Rail Highway Liaison Engineer</b> .”
④ 10-3	<b>Section 1.A: <u>Railroad/Highway Grade Crossings</u></b> – “Work of this nature can be accomplished by a special provision only, as prepared by the <b>Railroad Liaison Office</b> .”	“Work of this nature can be accomplished by a special provision only, as prepared by the <b>Rail Highway Liaison Unit</b> .”
⑤ 10-3	<b>Section 1.A.1: Railroad/Highway Crossing Surfacing</b> – “The designer should contact the <b>Railroad Liaison Engineer</b> to determine the type and width of railroad crossing to be used. For further information see Chapter Two: <u>Roadway Design Process</u> , Section 22.B and Chapter Thirteen: <u>Planning and Project Development</u> , Section 5.G.”	“The designer should contact the <b>Rail Highway Liaison Engineer</b> to determine the type and width of railroad crossing to be used. For further information see Chapter Twelve: <u>Cost Estimating and Funding</u> , Section 1.E.”
⑤ 10-6	<b>Section 2: BRIDGE STRUCTURES</b>	Add new second paragraph: “Bridge may determine that an existing bridge structure will be replaced with a concrete box culvert, see Chapter Seven: <u>Earthwork</u> , Section 3.A for the demarcation between the culvert and grading contractor’s responsibilities.”

Page	Existing Text	Corrected Text
<b>Chapter Ten</b>		
④ 10-7	<b>Section 2.B: Skewed Structures</b> – “The <u>Standard/Special Plans Book</u> , (Ref. 10.4), provide details for concrete box culverts with skew angles ranging from 5° to 35°, in 5° increments.”	Remove this text
③ 10-8	<b>Section 2.E.1: Grade Separations</b>	Add new third sentence to the first paragraph: “For new structures it is desirable to include a 0.50 ft. allowance for future surfacing.”
③ 10-8	<b>Exhibit 10.4: Minimum Vertical Clearances for Structures</b>	Remove the first three rows and add a new first row, “Structures over roadways”
③ 10-8	<b>Exhibit 10.4: Minimum Vertical Clearances for Structures, Second column:</b> - “23.50 ft. (7.16 m) (3)”	“23.50 ft. (1)”
③ 10-8	<b>Exhibit 10.4: Minimum Vertical Clearances for Structures, Second column:</b> - “17.00 ft. (5.20 m) (4)”	“17.00 ft. (2)”
③ 10-8	<b>Exhibit 10.4: Minimum Vertical Clearances for Structures –</b> “1. It is desirable to include a 0.50 ft. (150 mm) allowance for future resurfacing.” “2. 16.40 ft. (5.00 m) is desirable.”	Remove these notes and renumber existing notes 3 and 4 as 1 and 2.

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<b>Chapter Ten</b>		
③ 10-8	<b>Exhibit 10.4: Minimum Vertical Clearances for Structures</b> – “* See Section 001.02 of the Nebraska Minimum Design Standards, (Reference 10.5), (web site) “New and Reconstructed Bridges on Rural State Highways” and Section 001.13 “New and Reconstructed Bridges on Municipal State Highways”.”	Remove this note.
③ 10-12 to 10-19	<b>Section 3. AIRWAY HIGHWAY CLEARANCES &amp; Exhibit 10.7</b>	Replace with new Section 3 including new exhibits 10.7, 10.8 and 10.9.
10-20	<b>Section 4: LANDSCAPING</b>	Replace all references to the <b>Roadside Development Unit</b> with <b>Roadside Stabilization Unit</b>
① 10-20	<b>Section 4: LANDSCAPING</b> – “Landscaping is an ongoing and essential part of <b>NDOR’s</b> Six-Year Plan and is the responsibility of the <b>Planning and Project Development Division.</b> ”	“Landscaping is an ongoing and essential part of <b>NDOT’s</b> Six-Year Plan and is the responsibility of the <b>Project Development Division.</b> ”
④ 10-20	<b>Section 4: LANDSCAPING</b> – “1. During the development of major (normally <u>not</u> resurfacing, lighting, etc.) roadway projects, urban or rural, the <b>Roadside Development Unit</b> in the <b>Planning and Project Development Division</b> will review and recommend an appropriate landscaping treatment for each project in accordance with the <b>AASHTO manual <u>A Guide for Landscape and Environmental Design</u></b> , (Reference 10.7).”	“1. During the development of major (normally <u>not</u> resurfacing, lighting, etc.) roadway projects, urban or rural, the <b>Roadside Development &amp; Compliance Unit (RDC)</b> in the <b>Project Development Division</b> will review and recommend an appropriate landscaping treatment for each project in accordance with the <b>AASHTO manual <u>A Guide for Landscape and Environmental Design</u></b> , (Reference 10.6).”

Page	Existing Text	Corrected Text
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④ 10-20	<b>Section 4: LANDSCAPING</b> – Items 2, 3, 4 and 6	Replace <b>Roadside Development Unit</b> with <b>RDC</b>
④ 10-21	<b>Section 4.A: <u>Tree Planting and Removal</u></b>	Replace all references to the <b>Roadside Development Unit</b> with <b>RDC</b>
① 10-21	<b>Section 4.A: <u>Tree Planting and Removal</u></b> – “Normally, trees and other flora located within the recovery area for out-of-control vehicles or the limits of construction will be removed, however, the retention of healthy trees and other desirable flora will be reviewed on a case-by-case basis by the <b>Roadside Stabilization Unit</b> in the <b>Planning and Project Development Division</b> and the <b>District Engineer</b> to determine appropriate action.”	“Normally, trees and other flora located within the recovery area for out-of-control vehicles or the limits of construction will be removed, however, the retention of healthy trees and other desirable flora will be reviewed on a case-by-case basis by the <b>Roadside Stabilization Unit</b> in the <b>Project Development Division</b> and the <b>District Engineer</b> to determine appropriate action.”
④ 10-22	<b>Section 5: SNOW REMOVAL</b> – “Contact the <b>Roadside Development Section</b> for the possibility of using living snow fence at the right-of-way line.”	“Contact the <b>RDC</b> for the possibility of using living snow fence at the right-of-way line.”

Page	Existing Text	Corrected Text
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③ 10-22	<p><b>Section 6: FENCING</b> – Guidance moved from Chapter Twelve: <u>Cost Estimating &amp; Funding</u> and Chapter Fifteen: <u>Right-of-Way</u>, beginning with the second sentence of the first paragraph</p>	<p>“When fencing is specified (as it is on Interstate and freeway projects), the fencing is run along the right-of-way line according to the <u>Standard Specifications for Highway Construction (Spec Book)</u>, Section 910 (Ref. 10.13) (web site). The following exceptions and criteria should be kept in mind:</p> <ul style="list-style-type: none"> <li>• Where there is a frontage road, the fence is placed between the frontage road and the mainline</li> <li>• Fences should tie into the ends of box culverts or cattle passes</li> <li>• Fences should tie into the ends of existing fences and grade separation structures. Where the crossroad runs underneath, fences may run underneath the structure</li> <li>• If a portion of a utility line within the right-of-way is left undisturbed, the access fence may be run just inside of the utility line</li> <li>• At rural interchanges, fencing should extend 500 feet along the cross road from the ramp termini</li> </ul>
④ 10-23	<p><b>Section 8: RETAINING WALLS</b> – “<u>EXHIBIT 10.8</u> outlines <b>NDOR’s</b> basic procedure to be followed in the design of retaining walls.”</p>	<p>“Section 2.2.11 of the <u>Bridge Office Policies And Procedures (BOPP)</u> Manual (web site) outlines <b>NDOT’s</b> basic procedure to be followed in the design of retaining walls.”</p>
④ 10-24 & 10.25	<p><b>Exhibit 10.8 NDOR Retaining Wall Design Guidelines</b></p>	<p>Remove this exhibit, it is not current</p>

Page	Existing Text	Updated Text
<b>Chapter Ten</b>		
10-26 to 10-36	<b>Section 10 PEDESTRIAN AND BICYCLIST ACCESSIBILITY</b>	Remove this section. See Chapter Sixteen: <u>Pedestrian and Bicycle Facilities</u> .
① 10-37 to 10-42	<b>11. MAINTAINING TRAFFIC DURING CONSTRUCTION</b>	Remove this section. See Chapter Fourteen: <u>Traffic</u> , Section 6.
③ 10-42	<b>12. MAILBOX TURNOUTS AND SUPPORTS</b>	<b>10. MAILBOX TURNOUTS AND SUPPORTS</b>
④ 10-42	<b>Previous Section 12: MAILBOX TURNOUTS AND SUPPORTS</b> – “ <u>EXHIBIT 10.15</u> shows minimum clearance distances for mailboxes near intersections with county roads.”	“ <b>FIGURE 11.4</b> of the <u>Roadside Design Guide</u> (Ref. 10.12) shows minimum clearance distances for mailboxes near intersections with county roads.”
③ 10-42	<b>Previous Section 12: MAILBOX TURNOUTS AND SUPPORTS</b> – “A turnout width of 8 ft. (2.4 m) should be considered as desirable on 3R projects and other types of work.”	“See Chapter Seventeen: <u>Resurfacing, Restoration and Rehabilitation (3R) Projects</u> for 3R project design guidance.”
① 10-42	<b>Previous Section 12: MAILBOX TURNOUTS AND SUPPORTS</b> – “For additional information see a <u>Guide for Erecting Mailboxes on Highways</u> (Reference 10.12) and the <u>Roadside Design Guide</u> (Reference 10.16).”	“For additional information see a <u>Guide for Erecting Mailboxes on Highways</u> (Reference 10.8) and the <u>Roadside Design Guide</u> (Reference 10.12).”
④ 10-32	<b>Exhibit 10.15 Clearance Distances for Mailboxes Near Rural Intersections</b>	Remove this exhibit, it may be found in the <u>Roadside Design Guide</u>

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<b>Chapter Ten</b>		
⑤ 10-44 to 10-49	<b>11: UTILITIES</b>	New section, this had been Section 6 of Chapter Thirteen: <u>Planning and Project Development</u>
⑤ 10-50	<b>13: ROADWAY LIGHTING</b> and subsequent sub-sections	<b>12: ROADWAY LIGHTING</b>
⑥ 10-50	<b>Previous Section 13: ROADWAY LIGHTING –</b> “The <b>Roadway Design Lighting Unit</b> is responsible for ascertaining the need for roadway lighting for each project, and for the design of the lighting systems. Lighting will be considered at the plan-in-hand inspection. The <b>Lighting Engineer</b> shall be notified if the <b>District Engineer</b> determines that a project will include lighting in order to avoid right-of way problems and utility, driveway and drainage conflicts.”	“Roadway lighting systems on all <b>NDOT</b> projects will conform to the requirements of the <b>Illuminating Engineering Society of North America (IESNA)</b> Standard RP-8. The <b>Roadway Design Lighting Unit (Lighting Unit)</b> , using the warrants as outlined in this manual and any lighting recommendation(s) from the project plan-in-hand report, is responsible for determining if roadway lighting is warranted for a project. If lighting is found to be warranted, the <b>Lighting Unit</b> is responsible for its design and inclusion into the project. The roadway designer shall promptly notify the <b>Lighting Engineer</b> if the plan-in-hand lighting recommendation is, in any manner, changed by the <b>District.</b> ”



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**Previous Section 13.A: Guidelines for the Installation of Roadway Lighting** – “Requests for new lighting should be transmitted to the **Lighting Engineer**, who will conduct a study for each request. If the results of the study satisfy the conditions of one of the warrants in the following sections, **NDOR** may add lighting to a programmed project or schedule a lighting project to design and build a lighting system at the requested location (subject to the availability of funds). The **Lighting Engineer** will determine the type and style of the system. Even though a lighting request meets the appropriate warrants the **State** is not obligated to provide lighting. **NDOR** will own all lighting systems within state highway right-of-way.”

“Requests for new roadway lighting should be forwarded to the **Lighting Engineer**, who will conduct a study for each request received. If the results of the study satisfy the conditions of one of the following warrants, **NDOT** may, subject to the availability of funds, add lighting to an already programmed project or schedule a lighting project to design and build a system at the requested location. The **Lighting Unit** will determine the type and style of the lighting system that will be provided. Even though a lighting request meets appropriate lighting warrants, the **State** is not obligated to provide roadway lighting. **NDOT** will own all lighting systems within state highway right-of-way.”

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**Previous Section 13.A.1.c: Costs** – “When specifying lighting for an urban project be sure that local government officials are aware that the cost of maintaining and operating the system is a **City/ Village** responsibility. Lighting cost estimates should be obtained from the **Roadway Lighting Section** and given to local officials, prior to the agreement signing, so that the **City/Village** may plan and budget for the expense. They should also be informed that the lighting system might include poles that are outside of corporate limits. A signed city covenant agreement is required before a public hearing can be scheduled.”

“When roadway lighting is scheduled for an urban project, the **Roadway Unit Head** or designer will ensure that local government officials are aware that the maintenance and operating costs of the lighting system will be the sole responsibility of the **City/ Village**. Maintenance and operating cost estimates should be obtained from the **Lighting Unit** and presented to the local officials, prior to the signing of an agreement, to allow the **City/Village** to plan and budget for the expense. The local officials should also be informed that the lighting design, in order to be complete, may include a few poles that are outside of their corporate limits that they will be asked to be responsible for. A signed covenant agreement is required before a public hearing can be scheduled.”

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<p>© 10-51</p>	<p><b>Previous Section 13.A.1.c: Costs</b> – “Lighting Projects INSIDE the corporate limits meeting warrant I, II, or III and <u>not</u> installed as part of a “New and Reconstructed”, “3R”, or “Maintenance” project: The local governing authority will pay for 50% of the installation cost and 100% of the lighting system.”</p>	<p>“Roadway lighting projects within corporate limits meeting lighting warrant I, II or III and NOT installed as part of a New or Reconstructed, 3R, or Maintenance project will have <b>City/ Village</b> participation as follows:</p> <p style="padding-left: 40px;">The local governing authority will pay for 50% of the installation cost and 100% of the lighting system.”</p>
<p>© 10-51</p>	<p><b>Previous Section 13.A.1.c: Costs</b> – “Lighting Projects INSIDE the corporate limits meeting warrant I, II, or III and installed as part of a “New and Reconstructed”, “3R”, or “Maintenance” project: Installation will be a project cost. 100% of the operation and maintenance costs of the lighting system will be the responsibility of the local governing authority.”</p>	<p>“Roadway lighting projects within corporate limits meeting lighting warrant I, II or III and installed as part of a New or Reconstructed, 3R, or Maintenance project will have <b>City/ Village</b> participation as follows:</p> <p style="padding-left: 40px;">Installation will be a project cost. 100% of the operation and maintenance costs of the lighting system will be the responsibility of the local governing authority.”</p>
<p>© 10-51 &amp; 10-52</p>	<p><b>Previous Section 13.A.2.a: Warrants</b> –</p> <ol style="list-style-type: none"> <li>1. There are complex or unusual geometrics.</li> <li>2. The intersection sight distance is less than 660 ft.</li> <li>3. There is frequent pedestrian traffic (more than 200 per day).</li> <li>4. Adjacent development creates confusing background lighting.</li> <li>5. There are raised medians on the mainline highway.”</li> </ol>	<ol style="list-style-type: none"> <li>1. Complex or unusual geometrics.</li> <li>2. Intersection sight distance less than 660 ft.</li> <li>3. Pedestrian traffic of more than 200 per day.</li> <li>4. Confusing background lighting from adjacent development.</li> <li>5. Raised medians on the mainline highway.”</li> </ol>

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<b>Chapter Ten</b>		
⑥ 10-52	<b>Previous Section 13.A.2.b: Costs</b> – “Lighting projects OUTSIDE of the corporate limits meeting warrant A, B, or C: The <b>State</b> will assume responsibility for the cost of installation, operation, and maintenance of lighting system.”	“Roadway lighting projects outside of corporate limits and meeting warrant A, B or C will require no <b>City/ Village</b> participation. The <b>State</b> will assume total responsibility for the costs of installation, operation, and maintenance of the lighting system.”
⑥ 10-52	<b>Previous Section 13.A.4: Interchange Lighting</b> – “Warrants for interchange lighting on Interstates or Expressways will be determined using the warrants in <u>An Informal Guide for Roadway Lighting</u> (Reference 10.13). If the lighting is located in an urban area the local political subdivision will have the responsibility for 100% of the operation and maintenance costs of the lighting system”	“Warrants for interchange lighting on Interstates or Expressways will be determined using the warrants as outlined in the AASHTO publication <u>Roadway Lighting Design Guide</u> (Reference 10.9). The operational and maintenance costs of the interchange lighting that falls within the corporate limits of a <b>City/ Village</b> will be the sole responsibility of that <b>City/ Village</b> .”
⑤ 10-53	<b>14: PARKING</b> and subsequent sub-sections	<b>13: PARKING</b>
④ 10-53	<b>Previous Section 14.A: Accessible Parking</b> – “When the <b>Department of Roads</b> constructs or re-stripes parking spaces, it must provide accessible parking spaces as required by the <u>Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities</u> (Reference 10.11).”	“When the <b>Nebraska Department of Transportation</b> constructs or re-stripes parking spaces, it must provide accessible parking spaces as required by the <u>Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities</u> (Reference 10.7).”

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④ 10-53

**Previous Section 14.A: Accessible Parking –**

“When the **Department of Roads** constructs or re-stripes parking spaces, it must provide accessible parking spaces as required by the American with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities (Ref. 10.11). Accessible parking spaces must be located to provide the shortest possible accessible route of travel to an accessible facility. Accessible parking spaces for automobiles must have a minimum 5 ft. wide access aisle located next to the designated parking space and accessible parking spaces for vans require a minimum 8 ft. access aisle. The access aisle must be level (2% maximum slope in all directions) and the same length as the parking stall(s) it serves. Access aisles may serve two parking stalls. Ramps will not extend into the access aisle. EXHIBIT 10.18 shows a typical access aisle layout and the required minimum number of accessible stalls for a given number of parking spaces. The designer should check local standards and consult with the local city officials regarding the number of accessible parking spaces. Further information may be found at (web site)”

“When the **Nebraska Department of Transportation** constructs or re-stripes parking spaces, it must provide accessible parking spaces as required by the Architectural and Transportation Barriers Compliance Board Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (web site) (Ref. 10.7).

④ 10-55

**Exhibit 10.16b Parking Stall Dimensions for Curb and Street Parking (Metric)**

Remove this exhibit

Page	Existing Text	Updated Text
<b>Chapter Ten</b>		
④ 10-57	<b>Exhibit 10.17b Parking Stall Dimensions for Parking Lots and Garages (Metric)</b>	Remove this exhibit
④ 10-58	<b>Exhibit 10.18 ADA Accessible Parking Guide</b>	Remove this exhibit (Use Ref. 10.7)
③ 10-59	<b>15: REFERENCES</b>	<b>14: REFERENCES</b>
① 10-59 & 10-60	<b>Previous Section 15: REFERENCES</b>	Remove References 10.2a, 10.2b, 10.6, 10.8, 10.9, 10.10 and 10.17. Rename Reference 10.2c to 10.2 and update from 2001 to 2011. Update Reference 10.16 from 2002 to 2011.
① 10-59 & 10-60	<b>Previous Section 15: REFERENCES</b>	Renumber Reference 10.7 as 10.6, 10.11 as 10.7, 10.12 as 10.8, 10.13 as 10.9, 10.14 as 10.10, 10.15 as 10.11, 10.16 as 10.12, and 10.17 as 10.13
④ 10-59	<b>Previous Section 15: REFERENCES: New Reference 10.7 -</b> “U.S. Architectural and Transportation Barriers Compliance Board (Access Board), “Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities”, Washington, D.C., 2002. (web site)	“Architectural and Transportation Barriers Compliance Board, (Access Board), <u>Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way</u> , Washington, D.C. 2011. (web site)
⑥ 10-60	<b>Previous Section 15: REFERENCES: Reference 10.9 -</b> “ <u>An Informational Guide for Roadway Lighting</u> , Washington D.C., 1985”	“ <u>Roadway Lighting Design Guide</u> , Washington D.C., 2018”
⑤ 10-60	<b>Previous Section 15: REFERENCES</b>	Add new References 10.13 through 10.17

